



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

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SEP 07 2011

Ref: EPR-N

Mr. Caleb Hiner, RMP Project Manager
Bighorn Basin RMP and EIS
Bureau of Land Management
Worland Field Office
101 South 23rd Street
Worland, Wyoming 82401

Re: Bighorn Basin Draft Resource Management
Plan and Environmental Impact Statement
CEQ#20110120

Dear Mr. Hiner:

The U.S. Environmental Protection Agency Region 8 has reviewed the Draft Resource Management Plan and Environmental Impact Statement (Draft RMP and EIS) prepared by the Bureau of Land Management for the Bighorn Basin RMP Revision Project. While EPA participated as a cooperating agency, our comments are provided for your consideration pursuant to our responsibilities and authority under Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C), and Section 309 of the Clean Air Act (CAA), 42 U.S.C. Section 7609.

Background and General Discussion

The Draft EIS analyzes the potential impacts of BLM land management decisions in the Bighorn Basin in northwestern Wyoming. The Bighorn Basin planning area covers a total of 5.6 million acres in Big Horn, Park, Washakie and Hot Springs Counties, of which 3.1 million acres are BLM-administered surface lands and 4.2 million acres are federal mineral estate administered by the Cody Field Office and Worland Field Office. The Bighorn Basin RMP will revise existing RMPs for both the Cody and Worland Field Offices.

EPA provided scoping comments to BLM on November 14, 2008 and participated as a cooperating agency on the Draft RMP and EIS. While EPA's primary concerns regarding air quality and water quality raised during scoping remain unresolved in the Draft RMP, we do want to acknowledge that EPA has met numerous times with BLM in recent weeks to discuss and identify approaches to resolve these concerns. EPA believes these discussions were productive and we hope that they, along with the following recommendations, will help BLM to be responsive in the Final EIS. EPA remains committed to working with BLM to further discuss these comments and seek ways to resolve our concerns.

EPA's Major Comments and Recommendations

EPA has three significant concerns which are highlighted in this letter: air quality, groundwater resources and Wild and Scenic Rivers. Along with an explanation of the nature of these concerns, we offer recommendations on how BLM might address them. Our letter provides additional comments and suggestions regarding protection of wetlands, greenhouse gas emissions and climate change, and water quality. The enclosed "Detailed Comments" provide more detail regarding these issues as well as additional recommendations (See Attachment 1).

A. Air Quality

1. Lack of Sufficient Analysis to Evaluate and Disclose Air Quality Impacts

EPA believes that the Draft EIS contains insufficient information to evaluate and disclose potential impacts to air quality and air quality related values. A thorough analysis of air quality is essential because of the proximity of the proposed development and its associated projected emissions to five federal Class I areas (North Absaroka, Washakie, Fitzpatrick, and Bridger Wilderness Areas, and Yellowstone National Park) and four sensitive Class II areas (Bighorn Canyon National Recreation Area, Bighorn National Forest, Teton Wilderness Area, and Cloud Peak Wilderness Area). More specifically, these sensitive areas are located either within, directly adjacent to, or within 35 miles of the RMP planning area.

Without an air quality impact analysis to confirm otherwise, EPA must assume that the predicted cumulative emissions from the estimated 1,534 new oil, gas and coalbed methane wells identified for the preferred alternative are potentially substantial. Our understanding is that BLM has not completed a cumulative air quality impact analysis for the 6,133 oil and gas wells that have already been drilled on BLM administered mineral estate. We also understand that BLM has not completed such an analysis for the 4,544 existing active wells within the planning area or for the 1,534 planned wells. In short, the EPA believes that the "level of concern" that would warrant modeling under Management Action 1005 (contained in the Draft RMP) has already been reached.

The RMP/EIS process presents an ideal opportunity to disclose and analyze the potential impacts from past and future resource development in close proximity to Class I areas. To this end, EPA believes that including air quality modeling necessary to accurately estimate potential impacts in the Final RMP/ EIS will maximize the ability of BLM to identify, evaluate and implement important land management decisions and protect air quality. Absent this analysis it is not possible to determine what, if any, mitigation measures may need to be broadly implemented in the planning area.

2. Recommended Future Air Quality Analyses to Satisfy NEPA Requirements

For the reasons stated above, EPA prefers that the Final EIS include a quantitative analysis that utilizes air quality modeling of the potential impacts of activities authorized under the Bighorn Basin RMP. Nonetheless, we agree that air quality impacts can be adequately evaluated and disclosed provided that BLM pursues one of the following approaches:

- 1) Conduct basin-wide dispersion modeling based on the emissions inventory and include this information in the Final EIS; or

- 2) Utilize representative photochemical grid modeling planned for another project (e.g. Powder River Basin Coal Review) with the appropriate modeling domain for the Bighorn Basin to determine the contribution of the RMP activities and include this information in the Final EIS; or
- 3) Modify Management Action 1005 in the Final EIS to include an air resources management plan. The air resources management plan should be included in the Final EIS and as described in Attachment 2 contain additional detail clarifying how and when modeling will be performed, and mitigation potentially implemented.

B. Protection of Groundwater Resources

1. *Incomplete Disclosure of Groundwater Characteristics and Potential Impacts*

The characterization of groundwater in the Draft EIS does not include important and up-to-date information necessary to protect groundwater water resources. The Draft EIS acknowledges that the planning area includes sensitive drinking water resources, but does not contain a complete and up-to-date evaluation of these resources, including recharge areas and source water protection zones designated by the State of Wyoming. The Draft EIS references the Wyoming Water Development Commission's (Commission's) 2003 Wind/Bighorn River Basin Plan for the ground water analysis. The Commission is currently updating the 2003 report, and intends to circulate the revised report for public comment later this summer. Additional data that is included in the 2011 revision includes identification of the major aquifers in the basin, their three dimensional extent, and the physical and chemical characteristics of their groundwater; estimates of the quantity of water in the aquifers and aquifer recharge rates; and descriptions of the aquifer recharge areas. In addition, EPA recommends BLM consider the *Wyoming Groundwater Vulnerability Assessment Handbook* (SDVC Report 98-01, 1998) which includes maps of aquifer sensitivity and identifies shallow groundwater aquifers that are susceptible to contamination. Analysis of this updated information in the Final EIS will maximize the ability of the BLM to determine where leasing stipulations are needed to protect current and future drinking water resources.

The EPA recommends that BLM use this updated information in the Final EIS to identify water budget projections related to activities considered on BLM land, since water shortages were identified in the Draft EIS as a potential concern.

In the event that updated groundwater hydrology and quality information is unavailable, we recommend that the Final EIS explain that the groundwater resources are not fully defined and identify the potential future requirements applicable to operators for gathering information on water quality and depth of useable groundwater, and subsequently to comply with protective requirements as appropriate.

2. *Lack of Information Regarding Mitigation Measures To Protect Groundwater*

The Draft EIS provides insufficient information regarding mitigation measures that could be employed to protect groundwater resources. Important groundwater aquifers in the Bighorn basin must be protected as oil and gas development proceeds. Oil and gas activities, including construction, drilling, well stimulation, pipelines, produced fluid storage and transport provide opportunities for the introduction of contamination into the groundwater including petroleum compounds (e.g. benzene, toluene, xylene, etc). According to the Draft EIS, one of the key ways BLM intends to address these

potential impacts is to establish best management practices (BMPs). However, the Draft EIS does not provide the specificity needed to assess the adequacy of the BMPs. EPA suggests that BLM provide this specificity by including additional information in the Final EIS on the types of BMPs the BLM plans to implement, including the circumstances under which the BMPs would be applied. Specifically, EPA recommends the Final EIS include:

- 1) A list of BMPs that may be required to protect groundwater resources. EPA recommends BLM consider the groundwater BMPs that were developed for the Pinedale Anticline oil and gas field in response to monitored groundwater contamination.
- 2) Identification of the circumstances under which the BMPs would be applied (e.g. wetlands, shallow water aquifers, proximity of water wells.)
- 3) Identification of how BMPs would be monitored and enforced.

The RMP revision process provides the BLM with a key opportunity to protect sensitive resources through avoidance measures, including no leasing or no surface occupancy in critical areas. Source water protection is important because these essential water resources serve people that could be exposed to any contaminants in the water over a long period of time. As such and in addition to BLM's plans to use the protective measures established by the Wyoming Department of Environmental Quality (DEQ) and Oil and Gas Conservation Commission and BMPs, we recommend that the BLM develop lease stipulations for sensitive resources to ensure that the potentially significant impacts are avoided as much as possible. Our specific recommendations for stipulations to avoid and protect sensitive drinking water resources are attached (See Attachment 3). EPA developed these recommendations based on the Wyoming's Source Water Assessment and Protection Guidance (October 2000) and in consideration of BLM's Instructional Memorandum UT 2010-055 Protection of Groundwater Associated with Oil and Gas Leasing, Exploration, and Development. Disclosing in the Final EIS/RMP a general framework under which operators would be expected to perform will establish BLM's expectations for future leasing or development opportunities.

3. Groundwater Monitoring

The Draft EIS contains insufficient information to evaluate the adequacy of BLM's planned groundwater monitoring program. The Draft EIS indicates the BLM plans to require groundwater monitoring "in areas of concentrated oil and gas development where groundwater has been determined to be of 'High' and 'Moderately High' priority by Wyoming DEQ" (Management Action 1028, Draft EIS page 2-47). However, neither the location of the development relative to the WDEQ priority areas nor the level of monitoring to be expected of oil and gas lease holders is disclosed. EPA believes this information is necessary to evaluate the adequacy of the proposed monitoring program and therefore requests that it be included in the Final EIS/ RMP.

An essential component of future project-level monitoring is baseline and long-term monitoring for private wells and clearly defining how the water supply will be replaced in the event that it is impacted. Monitoring is important to assure mitigation measures are adequate and that groundwater resources are being fully protected. In the absence of modeling to determine the distance from the project at which impacts may occur, we recommend that monitoring occur in private wells within one mile of the project area (the BLM Pinedale Anticline project and the U.S. Forest Service Eagle Prospect project are examples of where similar monitoring programs have been established). Groundwater baseline monitoring may also be necessary to identify the depths of aquifers that are used or could be used in the future for drinking water, referred to as Underground Sources of Drinking Water (USDWs). Aquifers

are presumed to be USDWs unless they have been specifically exempted or if they have been shown to fall outside the definition of USDW (e.g., over 10,000 mg/L TDS). We further recommend that the Final EIS/RMP include a commitment that future project-level NEPA analyses for oil and gas development will contain a specific comprehensive monitoring plan and program to track groundwater impacts as drilling and production operations occur.

C. Proposed Listing of Wild and Scenic Rivers

The Draft EIS provides no explanation of or justification for BLM's selection of a preferred alternative that does not protect and enhance Wild and Scenic River resources. The EPA recommends that the Final EIS describe the basis for BLM's decision with regard to listing of waterways within the planning area. According to the Draft EIS, there are 20 waterways within the planning area that BLM has found eligible for Wild and Scenic River designation, based on outstandingly remarkable values, and BLM found 14 waterway segments met the suitability factors for designation in accordance with BLM Manual 8351. The BLM currently manages all 20 waterways under interim management provisions that protect the qualities that preliminarily qualified the waterway segments as eligible for inclusion in the National Wild and Scenic River System. The Draft EIS states a management goal to "Manage recommended waterway segments suitable for inclusion in the [National Wild and Scenic River System]" with an associated objective to "Protect outstanding remarkable values of recommended eligible and suitable [Wild and Scenic River] segments." In spite of this goal and objective, Alternative D, the Preferred Alternative, does not recommend any of the waterway segments to Congress for inclusion in the National Wild and Scenic River System, and further proposes to no longer provide special management actions to protect their outstandingly remarkable values. The EPA is concerned that waterway segments warranting protection may lose their wild and scenic characteristics. The EPA strongly recommends that any segments found suitable upon BLM's re-analysis after receipt of public comment continue to be managed to protect and enhance the outstandingly remarkable values, and that this commitment is included in the Final EIS/RMP.

Additional Comments and Recommendations

A. Protection of Wetlands

The Draft EIS estimates 920 acres of short term disturbance and 139 acres of long-term disturbance to wetlands and riparian areas. The Draft EIS further explains that due to requirements to avoid surface-disturbing activities within 500 feet of water, actual direct impacts to wetlands would be less than this estimate. The EPA recommends that the Final EIS display the reduced disturbance achieved in order to provide a more accurate estimate of potential disturbance that considers the avoidance requirement. Doing so will more clearly identify where concerns exist, and enable focus on sensitive areas for protection.

It does not appear that the Draft EIS addresses the jurisdictional status of wetlands in the planning area. We recommend that a preliminary assessment of wetland jurisdiction be included in the Final EIS. Having this information readily available will be of use to BLM in future project planning by enabling focus of management practices on areas where sensitive resources are most at risk of being impacted. We further recommend that the RMP/EIS explain that jurisdiction will be determined in future project-specific EISs. Further, because a current National Wetlands Inventory is not available for the full planning area, we suggest that the BLM prepare an inventory of aquatic resources, characteristics, functions and overall ecological health. Having such an inventory will provide greater wetland and

riparian area protection in the Bighorn Basin by providing information that can be used by BLM when authorizing surface disturbance or planning mitigation for unavoidable impacts to wetlands. Because preparation of an inventory may take time, we recommend that the Final EIS explain how BLM plans to undertake an aquatic resource inventory in the future, and offer our assistance in designing such an inventory.

B. Greenhouse Gas Emissions and Climate Change

The Draft EIS includes important information regarding the link between greenhouse gases and climate change and the potential impacts of climate change, including a discussion of ongoing and projected regional climate change impacts relevant to the Bighorn Basin. We support BLM's effort to include emissions inventories for greenhouse gases for the years 2018 and 2028, associated with oil, natural gas, and locatable mineral activities. We recommend that the discussion of potential greenhouse gas emissions associated with other activities (e.g., motorized vehicle use as was included in the emissions inventory prepared for the Lander RMP) be quantified if possible, or else qualitatively compared as a total impact associated with each alternative, to allow for a more clear comparison among alternatives.

The EPA considers mitigation for greenhouse gas emissions to be an important consideration in NEPA activities. We appreciate the extensive efforts by Department of Interior and the BLM to understand and respond to climate change, described in Chapter 3. Additionally, we are interested in the Draft EIS's reference to potential carbon sequestration research and projects in Alternatives C and D; however, we were not able to find any detail on these efforts in the Alternative descriptions in the Draft EIS. We recommend that BLM consider additional mitigation measures that could reduce greenhouse gas emissions from RMP activities, for example methods to limit fugitive emissions of methane from oil and gas operations or to reduce combustion emissions.

C. Protection of Surface Water Quality

According to the Draft EIS, there are 24 stream segments that are currently listed by the State of Wyoming as Threatened or Not Supporting their designated beneficial uses due to levels of fecal coliform and/or E. coli. The EPA is therefore concerned about the potential for RMP management activities to cause or contribute to further water quality impairments in the planning area. We support the BLM's effort to incorporate Management Action 1039 into Table 2-5 to address the goal to "Maintain the quality of surface water and groundwater resources, maintain compliance with applicable federal and state water quality standards, and improve water quality where practical within the scope of the BLM's authority." We also urge that BLM provide additional detail to Alternative D of this management action to make clear how the BLM will address waterbodies not meeting state water quality standards. We believe this can be accomplished by identifying the best management practices and discussion how they will be prioritized and implemented to address causal factors related to the impairment of water quality.

The Draft EIS identifies mitigation measures associated with Alternative D to address some potential impacts to surface water quality, including requiring a ¼ mile water resource buffer for placement of salt, mineral or forage supplements. Given that the Draft EIS acknowledges that livestock may increase loading of fecal bacteria, EPA suggests that the Final EIS clearly discuss how this buffer will be adequate to protect water quality in the planning area, or whether additional mitigation measures are needed (e.g. larger buffer, timing). Finally and because Alternative B provides for a ½ mile buffer, we

recommend that the Final EIS explain whether any additional benefits would be gained from this wider buffer size.

Conclusion and EPA's Rating

Many of the comments and recommendations presented in this letter have already been discussed with you and your colleagues in the Field Office, and the State Office. We understand that BLM will address many of these comments in the Final EIS. We support this approach and stand ready to continue our collaboration and offer assistance where we can.

As you know, the EPA is obligated to rate all Draft EISs, based on the information contained in the document itself. Based on our review of the Bighorn Basin Draft RMP/EIS we received on April 28, 2011, we are rating this document as "Environmental Objections – Insufficient Information" (EO-2). The "EO" rating indicates that our review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. The "2" rating indicates that the Draft EIS does not contain sufficient information for the EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment. As our comments suggest, EPA recommends the identified additional information be included in the Final EIS.

If you have any questions or would like to discuss our comments, please contact me at (303) 312-6925. You may also contact Molly Brodin, lead reviewer for this project, at (303) 312-6577 or by email at brodin.molly@epa.gov.

Sincerely,



Suzanne J. Bohan
Director, NEPA Compliance and Review Program
Office of Ecosystems Protection and Remediation

Cc: Buddy Green
Enclosures (4)

ATTACHMENT 1
EPA's Detailed Comments
Bighorn Basin RMP Revision Project Draft EIS

Air Quality

- Draft EIS, Table 3.3, Applicable NAAQS and Representative Concentration. Please note that the sulfur dioxide method measured by the WARMS network is not directly comparable to the SO₂ NAAQS. The WARMS method is a filter-cartridge based method used to sample sulfate aerosols, typically used in for visibility-related comparisons. An equivalent reference method analyzer meeting the requirements of 40 CFR Part 50, Appendix A should be used to compare against the NAAQS. We recommend contacting the Wyoming DEQ for appropriate SO₂ monitoring data.
- Draft EIS, Section 4.1.1, Air Quality and Appendix U, Technical Support Document for Air Quality. The EPA is confused by the discussion on page 4-6 of the Draft EIS, which lists “fire management (including prescribed fire)” as among the activities for which emissions have been quantified, but later states “emissions from any prescribed fire activities conducted on BLM land within the Planning Area have not been estimated in this analysis.” Based on Appendix U, it appears to us that prescribed fire emissions have been included in the emissions inventory, and we recommend that the Final EIS clarify this point. In addition to the commitment to manage prescribed burns to comply with Wyoming DEQ Air Quality District smoke-management rules and regulations already included as Management Action 1001, we recommend that the Final EIS include: (1) discussion of appropriate smoke monitoring techniques and mitigation (including meteorological conditions favorable for mitigated prescribed fire smoke and alternatives to prescribed fire such as mechanical fuel reduction methods); (2) requirements for the incorporation of the Interagency Prescribed Fire Planning and Implementation Procedures Guide (July 2008) into site-specific burn plans that would be designed for each prescribed burn conducted under this GMP; and (3) commitment to public notification of pending burns.
- In the absence of air quality modeling conducted in the Bighorn Basin RMP area, the EPA’s concerns regarding potential impacts to Class I areas are based on the level of emissions quantified in the Draft EIS emissions inventory, and the proximity of current and prospective development to Class I areas. These concerns are supported by past experience with oil and gas projects in proximity to sensitive airsheds. We therefore are providing the following to examples to clarify the basis for our concern.

Example 1: Draft EA of Proposed Oil and Gas Exploration, Baca National Wildlife Refuge, Saguache County, Colorado January 2011 USFWS, where NO_x levels associated with oil and gas development proposed to occur 16.1 km from the Great Sand Dunes National Park (a Federal Class I area) were estimated to be 103 TPY. Due to this proximity to the Class I area, the USFWS applied timing and emissions control mitigation strategies to this project. A visibility analysis using Viscreen Screening Level 1 confirmed that associated impacts were above the acceptable thresholds at the Class I area. Therefore, USFWS performed a Screening Level 2 analysis, which showed acceptable impacts less than the visibility thresholds of concern.

Example 2: Draft EIS, USFS, WY, Noble Basin Master Development Plan (MDP) Project, which proposed drilling up to 136 Oil and Gas Wells in two phases on Existing Oil and Gas Leases on National Forest System (NFS) Lands, Approval of a Surface Use Plan of Operations (SUPO) for a Master Development Plan (MDP), Sublette County, WY, 2011. These emissions were projected to occur within 32 km of Bridger Teton Wilderness Area, a Federal Class 1 area, five miles from the Shoal Creek Wilderness Study Areas and 10 miles from the Gros Ventre Wilderness Study Areas, both sensitive Class II areas. Near field, far field and ozone modeling was conducted for a partially mitigated alternative with total NO_x emissions of 762 tpy. Modeling for this alternative showed one day of impairment to the Bridger Teton Class I area and more than 35 days of impairment at sensitive Class II areas. Also, near-field modeling showed exceedances of the 1-hour NO₂ and 24-hour PM₁₀ NAAQS.

Groundwater

- We are pleased that the Spanish Point Karst area, a critical groundwater recharge area, will be protected as an Area of Critical Environmental Concern. If updated information identifies any additional groundwater recharge areas, we recommend they also be protected as ACECs.

Wild and Scenic Rivers

- We recommend that BLM continue protection for waters that have been designated as Class I by the State of Wyoming (e.g., the Middle Fork of the Powder River and the Clarks Fork of the Yellowstone). Many of the values considered in designating Class I waters relate to outstandingly remarkable waterway values, including aesthetic, scenic, recreational, ecological, agricultural, botanical, zoological, historical, geological, cultural, archaeological, and fish and wildlife values. Protection of these values would have significant benefits to planning area resources.

Wetlands

- We appreciate the BLM's specification in Alternative D of No Surface Occupancy (NSO) stipulations for protection of wetland and riparian areas over 20 acres. We recommend that the Final EIS specify that the 20 acre NSO will apply to all wetlands regardless of jurisdiction, in accordance with Executive Order 11990. In addition, we recommend that BLM consider whether any high value wetland areas smaller than 20 acres would also warrant protection through a NSO stipulation. Factors to consider include but are not limited to: the jurisdictional waters of the U.S.; agency responsibilities under Executive Orders 11990 and 11988; the needs of species of concern; and potential impacts to aquatic communities. Systems such as fens, bogs, springs, hanging gardens and other zones of unique or rare habitat values are often particularly at risk of disturbance and surface occupancy should be restricted within the influence zones of these systems. We additionally provide the following recommendations for your consideration in developing lease stipulations:

- For areas within the influence zones of waters and wetlands such as fens and springs:
 - Consider NSO;
 - Prohibit use of evaporation ponds or other infrastructure that may interface with water resources;
 - Review the geology of shallow aquifers to determine the flow patterns supporting water elements such as fens, emergent wetlands, springs, seeps, hanging gardens, streams and ponds.
- If there is any question as to the jurisdictional status of waters in the planning area, we recommend that BLM consult with the local U.S. Army Corps of Engineers office.

ATTACHMENT 2
Recommendations for an Air Resources Management Plan
Bighorn Basin RMP Revision Project

We recommend that this plan include the following key elements:

1. A statement that:
"The activity in the basin has already reached a level of concern regarding cumulative adverse air quality impacts. This concern is based on the level of current emissions (1100 tons per year NOx) and the proximity (between 1 and 50 miles) of proposed leasing areas to five Federal Class I areas, including Yellowstone National Park, North Absaroka, Washakie, Fitzpatrick, and Bridger Wilderness Areas."
2. A discussion of the current air quality status of Class I areas in the project area, based on existing monitoring data and any other available information.
3. A statement that: *"basin-wide modeling to characterize the air quality of Class I areas will occur as soon as possible, subject to funding and staffing levels."*
4. A statement that: *"the modeling would be either (1) a project-specific model (e.g., Calpuff) or (2) another planned modeling effort decided upon in consultation with EPA and DEQ."*
5. A description of activities that BLM may authorize before Class I area Characterization is completed (e.g., A requirement for Applications for Permit to Drill or field development proposals to include an emissions inventory until such time as the Class I modeling and characterization is completed).
6. A statement that: *"A statement that "based upon the findings of the Class I Characterization, and as provided for by law and consistent with lease rights and obligations, BLM will ensure implementation of reasonable mitigation and control measures and design features through appropriate mechanisms, including lease stipulations and conditions of approval, notices to lessees, and permit terms and conditions."*
7. A statement that *"BLM would consider applying mitigation measures to oil and gas projects developed under this RMP in the event that a future air quality impact analysis determines there are adverse impacts to Class I areas."*
8. Inclusion of a list of mitigation measures that BLM could apply in the event future air quality modeling shows there to be an adverse impact to Class I
9. Inclusion of the Oil and Gas mitigation table currently in the Lander Air Plan, revised as appropriate to apply to the Bighorn Basin RMP.

ATTACHMENT 3
Recommended Groundwater Protection Measures
Bighorn Basin RMP Revision Project Draft EIS

The EPA recommends that the BLM develop lease stipulations for protection of sensitive drinking water resources during this RMP revision, which presents a key opportunity for avoidance and mitigation of potential significant impacts. Based upon our knowledge of the planning area, including the presence of sensitive groundwater and surface water resources designated by the State of Wyoming, we provide the following recommendations for inclusion in the Final EIS:

- Groundwater recharge areas:
 - Consider No Leasing in a recharge area with a 1000 foot wide buffer zone on both sides of all perennial streams for a distance of one mile upstream of the recharge area, or to the point where the stream becomes intermittent.
- Sole Source Aquifers:
 - Consider No Leasing.
- Source Water Protection Areas and Well Head Protection Areas:
 - Consider No Leasing in Groundwater Zones 1-3.
 - Consider No Leasing in Surface Water Zones 1-2.
 - If leasing occurs, impose No Surface Occupancy lease stipulations in Groundwater Zones 1-3 and Surface Water Zones 1-2.
 - Impose Controlled Surface Use Stipulations in Surface Water Zone 3 including but not limited to:
 - Closed loop drilling systems,
 - Line surface impoundment ponds (evaporation ponds or drilling pits) with synthetic liners and subsequently decommissioned by removing all contaminants and liner and reclaiming the area with natural vegetation,
 - Identify private wells and set stipulations to be protective (e.g., no occupancy within immediate area, collect baseline data on groundwater, etc.);
 - In leases already permitted but not drilled, impose Conditions of Approval for APDs including but not limited to the Controlled Surface Use Stipulations listed above.
- For areas with unconfined shallow groundwater, because the shallower the depth to water the more sensitive an aquifer is to contamination:
 - Consider No Surface Occupancy;
 - Prohibit use of evaporation ponds in proximity to shallow aquifers;
 - Review the geology of shallow aquifers to determine well construction requirements, which may include cementing to surface and drilling with a fresh water mud system.
 - To accurately identify sensitive aquifer systems, we recommend using the Wyoming Ground Water Vulnerability Assessment Handbook.
- General recommendations for standard lease stipulations/best management practices:
 - A general well design requirement to set surface casing and cement to a specific formation or depth if there are aquifers at depth that need protection;
 - Surface casing needs to be below the lowermost USDW and set into a confining (e.g., shale) layer;
 - A requirement for an intermediate string of casing and cement may be appropriate in the event of encountering very deep aquifers;

- Specify in the RMP that future oil and gas projects will need a Water Resource Management Plan to address water consumption and produced water disposal, including identifying water recycling opportunities.

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements

Definitions and Follow-Up Action*

Environmental Impact of the Action

LO - - Lack of Objections: The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC - - Environmental Concerns: The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO - - Environmental Objections: The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU - - Environmentally Unsatisfactory: The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 - - Adequate: EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information: The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new, reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate: EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.